Air Quality Permitting
Statement of Basis

May 31, 2005

Tier II Operating Permit and Permit to Construct No. T2-040005

Boise Packaging & Newsprint L.L.C., Nampa

Facility ID No. 027-00026

Prepared by:

Almer Casile, Permit Writer
AIR QUALITY DIVISION

FINAL

Table of Contents

Acronyms, Units, and Chemical Nomenclature

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IDAPA	A numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
MACT	Maximum Available Control Technology
MMBtu	Million British thermal units
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	synthetic minor
SO_2	sulfur dioxide
T/yr	tons per any consecutive 12-month period
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01 Sections 404 and 200 *Rules for the Control of Air Pollution in Idaho (Rules)* for Tier II Operating Permits and Permits to Construct, respectively.

2. FACILITY DESCRIPTION

The facility utilizes paper, starch, and steam to manufacture corrugated sheet material. Steam is provided by two 13.69 MMBtu/hr natural gas-fired boilers. Starch is received and stored in a silo equipped with a baghouse to control dust emissions during material unloading. The process utilizes a corrugator equipped with single facers, a double-back glue unit, and pre-heaters. Corrugated stock is processed into containers in various processes that involve cutting, slotting, folding, gluing, and printing.

3. FACILITY / AREA CLASSIFICATION

Boise Packaging and Newsprint LLC (Boise Packaging) is classified as a natural minor facility because the facility's potential to emit all regulated air pollutants is less than all applicable major source thresholds. The AIRS facility classification is "B" and the SIC code defining the facility is 2653.

The facility is located within AQCR 64 and UTM zone 11. The facility is located in Canyon County, which is designated as attainment or unclassifiable for all criteria pollutants.

The AIRS information provided in Appendix C defines the classification for each regulated air pollutant at Boise Packaging. This required information is entered into the EPA AIRs database.

4. APPLICATION SCOPE

The facility has submitted an air quality permit application to streamline monitoring and recordkeeping requirements, change the facility's name and ownership, and increase the annual formaldehyde emissions rate by 16 lb/yr, or 0.008 T/yr.

4.1 Application Chronology

February 6, 2004	DEQ received application
March 4, 2004	DEQ determined application complete

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this Tier II operating permit and PTC. This analysis does not include two,13.69 MMBtu/hr natural gas-fired boilers, which received PTC exemption concurrence from DEQ on November 10, 1997.

5.1 Equipment Listing

- Corrugator
- Starch Storage Silo and Baghouse
- Scrap Cyclone and Baghouse
- Printing and Gluing Equipment

5.2 Emissions Inventory

The primary pollutants of concern are PM_{10}, VOCs, and formaldehyde. A detailed emissions inventory has been included in Appendix A. A brief summary of PM_{10} and VOC emissions are given in the following table.

Table 5.1 EMISSIONS INVENTORY

Source Description	VOC		PM_{10}	
	lb/day	T/yr	lb/day	T/yr
Corrugator	67.2	5.84	1.8	0.33
Starch Silo Baghouse	N/A	N/A	1.85	0.34
Scrap System Baghouse	N/A	N/A	2.56	0.22
Printing and Gluing	N/A	19	N/A	N/A

Total formaldehyde emissions from printing and gluing were estimated to be 0.13 T/yr. The estimated increase in formaldehyde emissions is due to a switch in glue type in 2002. The increase in formaldehyde emissions is 16 lb/yr, or 0.008 T/yr.

5.3 Modeling

A full impact analysis of formaldehyde, PM_{10}, and NO_X emissions was conducted based on the facility's potential to emit each of these pollutants. Formaldehyde was included in the analysis because the short term increase exceeded the respective net screening emissions level for formaldehyde. Correspondence between DEQ and the facility revealed that only a portion of the estimated formaldehyde emissions rate was associated with this permitting action. It turns out that the facility changed the type of glue it uses in 2002 which results in an annual increase of 16 lb/yr of formaldehyde emissions. Modeling of the increase demonstrates compliance with the AACC for formaldehyde.

DEQ performed a sensitivity analysis to address concerns regarding the adequacy of the facility's receptor grid as submitted. The sensitivity analysis adjusted the receptor grid to ensure that it did not make a difference in the demonstration of compliance. The results of the sensitivity analysis are summarized in Table 5.4. Appendix B contains the detailed modeling review.

Table 5.2 FULL IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Facility Ambient Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ambient concentration ($\mu g/m^3$)	Applicable Standard ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	24-hour	16.5	90	106.5	150	71
	Annual	4.7	25	29.7	50	59
NO_2	Annual	34.7[a]	32	66.7	100	67

[a] Assumes 100% of NO_x is NO_2

Table 5.3 TOXIC AIR POLLUTANTS ANALYSIS RESULTS

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	Regulatory Limit (ug/m^3)	Percent of Limit
Formaldehyde	Annual	0.54E-02	7.7E-02	20

Table 5.4 RESULTS OF THE SENSITIVITY ANALYSIS

Pollutant	Averaging Period	Submitted by Applicant ($\mu g/m^3$)	Sensitivity Analysis ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ambient concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	24-hour	16.5	50.7	90	140.7	150	94
	Annual	4.7	11.8	25	36.8	50	74
NO_2	Annual	34.7[a]	31.4[a]	32	63.4	100	63

[a] Assumes 100% of NO_x is NO_2

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this T2 and PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

The proposed project subject to IDAPA 58.01.01.201 does not qualify for a PTC exemption; therefore, a PTC is required.

IDAPA 58.01.01.203 ..... Permit for New and Modified Stationary Sources

This regulation stipulates that the facility must demonstrate compliance with all applicable requirements, not cause or significantly contribute to a violation of the NAAQS, and comply with IDAPA 58.01.01.161. The facility has provided information to assure compliance with this requirement.

IDAPA 58.01.01.401 ..... Tier II Operating Permit

This permit authorizes the use of a potential to emit limitation to exempt the facility from Tier I permitting requirements.

IDAPA 58.01.01.404 ..... Procedure For Issuing Permit

The procedures for revision, issuance and approval apply to this permit.

40 CFR 60 ..... New Source Performance Standards (NSPS)

No equipment associated with this modification is affected by any NSPS standards.

5.5 Fee Review

The permittee is a stationary source with permitted emission of 10 to less than 100 tons per year. Fees apply as per Table 5.1.

Table 5.5 TIER II PROCESSING FEE SUMMARY

Emissions Inventory	
Pollutant	**Permitted Emissions**
NO_x	0
SO_2	0
CO	0
PM_{10}	0.89
VOC	24.84
TAPS/HAPS	0.0
Total:	25.73
Fee Due	**$ 5,000.00**

5.6 *Regional Review of Draft Permit*

A draft was provided for the Boise Regional Office on December 14, 2004. Comments were received from the Boise Regional Office on December 29, 2004, and addressed.

5.7 *Facility Review of Draft Permit*

A draft was provided for the permittee on December 30, 2004. Comments were received from the permittee on January 19, 2005. Various typographical errors and formatting errors were addressed in the operating permit. A deletion of fuel oil requirements in the facility wide section of the operating permit was made because the permittee stated that it did not operate equipment that used fuel oil. A revision in Permit Conditions 4.6 through 4.10 in the operating permit was made in order to clarify language. A revision was made to the statement of basis in order to clarify that the operating permit did not contain the facility's boilers, which had received PTC exemptions.

6. PERMIT CONDITIONS

6.1 Permit Condition 3.4 contains the visible emission requirements for the corrugator process.

6.2 Permit Condition 3.3 contains the emissions limits for the corrugator, starch silo baghouse, and the scrap system baghouse. The operating conditions in Permit Conditions 3.5 and 3.6 for the starch silo and scrap system baghouses have been established to assure compliance with the emission limits of Permit Condition 3.3. The operating conditions in Permit Condition 3.7 for the corrugator have been established to assure compliance with the emission limits of Permit Condition 3.3.

6.3 Compliance with the starch silo baghouse operating condition in Permit Condition 3.5 will be demonstrated through the monitoring and recordkeeping requirements of Permit Conditions 3.8 and 3.9.

6.4 Compliance with the scrap system baghouse operating condition in Permit Condition 3.6 will be demonstrated through the monitoring and recordkeeping requirements of Permit Conditions 3.8 and 3.10.

6.5 Compliance with the corrugator operating condition in Permit Condition 3.7 will be demonstrated through the monitoring and recordkeeping requirements of Permit Condition 3.11.

6.6 Permit Condition 3.12 will be used by the permittee to demonstrate compliance with the opacity requirement in Permit Condition 3.4.

6.7 The operating conditions in Permit Conditions 4.4 and 4.5 for the printing and gluing process have been established to assure compliance with the emission limits of Permit Condition 4.3.

6.8 Compliance with the ink and ink additives operating conditions in Permit Condition 4.4 and 4.5 will be demonstrated through the monitoring and recordkeeping requirements of Permit Conditions 4.6 and 4.7.

6.9 Compliance with the glue usage operating conditions in Permit Condition 4.4 and 4.5 will be demonstrated through the monitoring and recordkeeping requirements of Permit Conditions 4.8 and 4.9.

7. PUBLIC COMMENT

A public comment period on the proposed Tier II operating permit permit to construct and application materials was provided, in accordance with IDAPA 58.01.01.404.01.c. The public comment period was held from April 20, 2005 to May 19, 2005. No comments were received.

8. RECOMMENDATION

Based on the review of the application materials and all applicable state and federal regulations, staff recommends that DEQ issue a final Tier II Operating Permit and Permit to Construct No. T2-040005 to BPN. A public comment period was provided as required by IDAPA 58.01.01.404.01.c. The project does not involve PSD permitting requirements.

ABC/sd Permit No. T2-040005

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APPENDIX A

EMISSIONS INVENTORY

Fax Message

Clayton INDUSTRIES

El Monte, California, USA
Fax: 1-626-442-1701 Phone: 1-626-443-9381

To: Parameters **Date:** Sept. 18, 1997

Attn: Dick Burkhalter **From:** Andy Wales
263-863-6128/0946 - TEL/FAX

Re: Emissions Data for Clayton EG354-2.5-LNB Steam Generator **Page 1 of 1**

Per your request, here is the data requested on our Model EG354-2.5-LNB for Boise Cascade's Nampa, Idaho project. Note this unit will be used with a semi-closed receiver (SCR) feedwater system. The values given have been corrected for this operation.

All data given for 100% output rating

Heat Input Rating	13.69 MMBTU/hr
Typical O_2	9 %
Typical Excess air	67 %
Exhaust Gas Rate	17,648 lb/hr
Typical Exhaust Gas Temp. °F	428
Exhaust Stack Diameter	28 inches
NOx ppmv (corrected to 3% O_2)	30
NOx (lb/day)	11.8
CO ppmv (corrected to 3% O_2)	50
CO (lb/day)	12.0
SO_2 (estimated), ppmv (note 1)	6.39
SO_2 lb/day	8.21
Particulates, lb/day (note 2)	0.59
VOC (estimated), lb/day (note 2)	1.84

Notes:
1 - Values for SO_2 assume 92.5% conversion from Sulfur content in fuel (8 ppmw assumed)
2 - Estimated values based on typical industry data.
3 - lb/day values based on 24 hour/day operation @ 100% output

I trust this answers your questions. Please feel free to contact me 626-443-9381 or page me at 909-206-0978 if you need further information.

Best Regards, Andy Wales

Copy: Ray Adams / BC Nampa
Kevin Talbot - BC Boise
C. Maguire / El Monte File

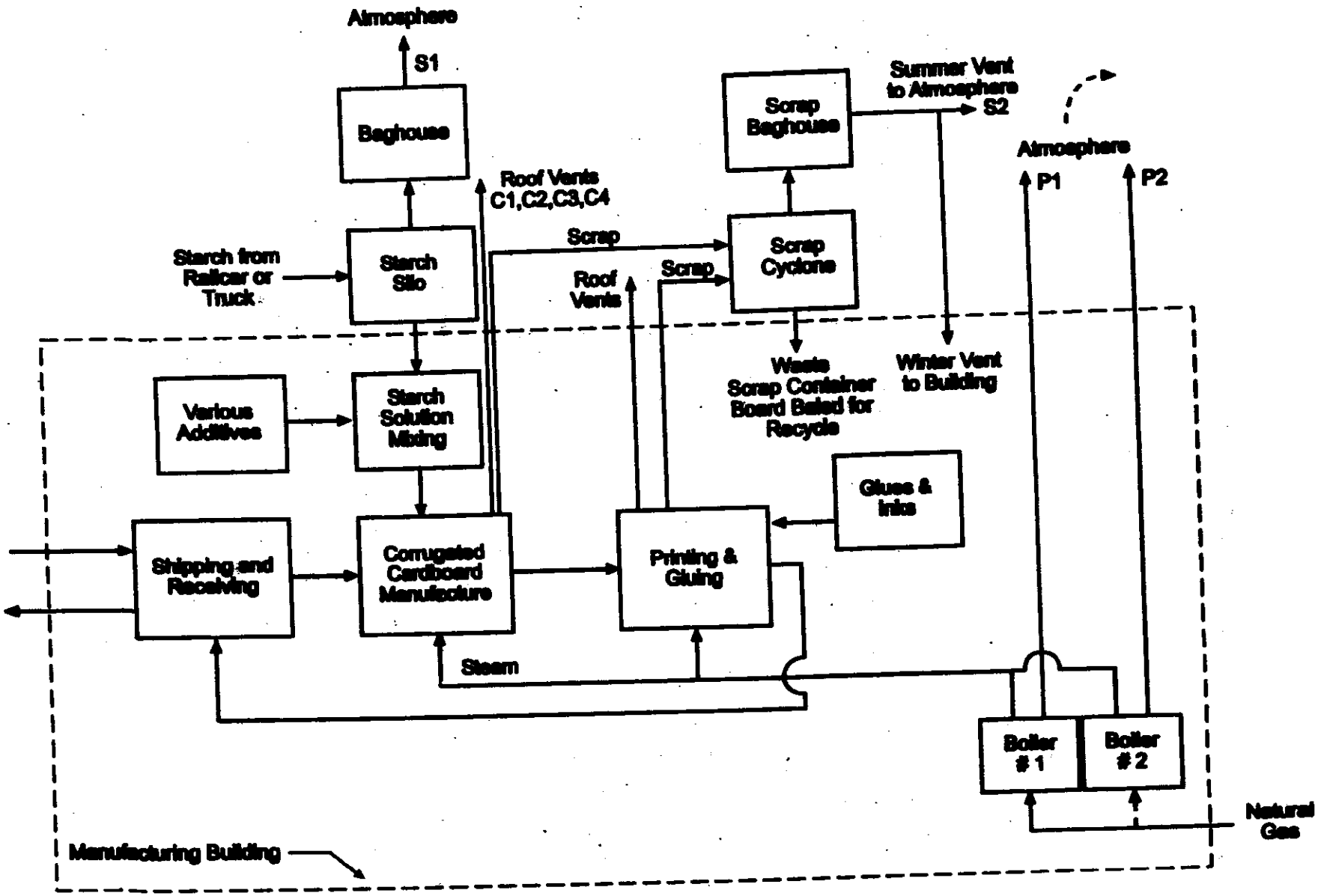

Figure 1
Process Flow Diagram
Boise Paper Solutions
Corrugated Container Facility - Nampa, Idaho

ATTACHMENT A

EMISSION ESTIMATE CALCULATIONS AND REFERENCES

See Table 2 for a summary of emission rates and production limits. Below are example calculations in support of Table 2.

Assumptions:

- Emissions assume 100% load and 8,760 hours/year operation unless otherwise noted.
- See Table 2 for complete statement of emissions and production limits.

Boilers (P1, P2)

Units fired natural gas only.
Clayton Industries, 13.69 mmBtu/hr each.
Reference: Manufacturer's data sheet, attached.

Estimated Emissions (per boiler):

CO:	12 lb/day x 1 d/24 hr = 0.5 lb/hr.	12 lb/day x 365 d/yr x 1 ton/2,000 lb = 2.2 ton/yr.
NOx:	11.6 lb/day x 1 d/24 hr = 0.49 lb/hr.	11.6 lb/day x 365 d/yr x 1 ton/2,000 lb = 2.1 ton/yr.
SO2:	0.21 lb/day x 1 d/24 hr = 0.009 lb/hr.	0.21 lb/day x 365 d/yr x 1 ton/2,000 lb = 0.039 ton/yr.
PM/PM10:	0.99 lb/day x 1 d/24 hr = 0.042 lb/hr.	0.99 lb/day x 365 d/yr x 1 ton/2,000 lb = 0.18 ton/yr.
VOC:	1.8 lb/day x 1 d/24 hr = 0.075 lb/hr.	1.8 lb/day x 365 d/yr x 1 ton/2,000 lb = 0.34 ton/yr.

HAPs (example for benzene):
Benzene:
0.0021 lb/10^6 cf x 1 cf/1,020 Btu x 13.69 mmBtu/hr = 0.000028 lb/hr
0.000028 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 0.0001 ton/yr

Corrugator (C1, C2, C3, C4)

PM/PM10:
Reference: *Industrial Hygiene Survey, Burley Container Division, Boise Cascade Corporation*, January 25 and 26, 1999. Timothy Mann, CIH. Emissions from Nampa Facility assumed to be similar to Burley Facility. Result: 0.25 mg/m^3.

C1:
10,100 acfm x 1 m^3/35.3 cf x 0.25 mg/m^3 x 1g/1,000 mg x 1 min/60 s x 3,600 s/hr x 1 lb/454 g = 0.0095 lb/hr.
0.0095 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 0.042 ton/yr.

C2:
23,300 acfm x 1 m^3/35.3 cf x 0.25 mg/m^3 x 1g/1,000 mg x 1 min/60 s x 3,600 s/hr x 1 lb/454 g = 0.022 lb/hr.
0.022 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 0.096 ton/yr.

C3:
23,300 acfm x 1 m^3/35.3 cf x 0.25 mg/m^3 x 1g/1,000 mg x 1 min/60 s x 3,600 s/hr x 1 lb/454 g = 0.022 lb/hr.
0.022 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 0.096 ton/yr.

C4:
23,300 acfm x 1 m^3/35.3 cf x 0.25 mg/m^3 x 1g/1,000 mg x 1 min/60 s x 3,600 s/hr x 1 lb/454 g = 0.022 lb/hr.
0.022 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 0.096 ton/yr.

VOC:
Reference: *Particulate and Volatile Organic Compound Emissions Factors for Container Plant Corrugator*, Prepared for Boise Cascade Corrugated Container Operations, Landau Associates, Inc., October 1995.

7.3E-06 lb VOC/sf x 385,000 sf/hr = 2.8 lb/hr.
7.3E-06 lb VOC/sf x 1,600,000,000 sf/hr x 1 ton/2,000 lb = 5.84 ton/yr.

Printing and Gluing

Reference: Boise Nampa Facility vendor data. Maximum VOC contents and total HAP contents are listed below. Emission rates for specific HAPs will vary depending upon the specific products used.

Glue:

VOC: 1,500,000 lb glue/yr x 0.50% VOC x 1 ton/2,000 lb = 3.8 ton/yr.
HAPs (total): 1,500,000 lb glue/yr x 0.20% total HAPs x 1 ton/2,000 lb = 1.5 ton/yr.
Specific HAPs (example: vinyl acetate): 1,500,000 lb glue/yr x 0.0.00049% x 1 ton/2,000 lb = 0.31 ton/yr.

Ink:

VOC: 380,000 lb ink/yr x 8.0% VOC x 1 ton/2,000 lb = 15.2 ton/yr.

HAPs (total): 380,000 lb ink/yr x 0.3% x 1 ton/2,000 lb = 0.57 ton/yr.
Specific HAP (e.g., glycol ethers): 380,000 lb ink/yr x 0.3% Total HAPs x 26% glycol ethers x 1 ton/2,000 lb = 0.15 ton/yr.

Starch Silo (S1)

Reference: IDEQ Permit No. 027-00026 for Starch Silo and Baghouse, March 16, 1995. Note that the permit limited emissions to 0.051 lb/hr based on an assumed particulate loading of 0.01 gr/dscf. Use of 0.015 gr/dscf is retained for consistence with the ambient air impact analysis.

Peak Hour: 0.015 gr/acf x 600 acfm x 60 min/hr x 1 lb/7,000 gr = 0.077 lb/hr.

Annual: 0.077 lb/hr x 8,760 hrs/yr (max) = 675 lb/yr = 0.34 ton/yr.

Scrap Cyclone (S2)

Reference: *Particulate Factors for Container Plant Cyclone Collection System, Boise Cascade Corrugated Container Operation*, Landau Associates, July 1995. Report result was emission factor of 0.915 lb/1,000 lb scrap collected, or 1.83 lb/ton scrap. Vendor letter documents baghouse has the following characteristics:

100% control for PM > 2 microns, 98.4% control for PM > 1 micron, and 95% control for PM > 0.1 microns. Assume 98% control overall.

PM/PM10:
160 lbs paper/1,000 sf x 9.5% scrap x 1.83 lb PM/ton scrap x 385,000 sf/hr x 1 ton/2,000 lb x (1 – 0.98) = 0.107 lb/hr.

160 lbs paper/1,000 sf x 9.5% scrap x 1.83 lb PM/ton scrap x 1.6 billion sf/yr x 1 ton/2,000 lb x (1 – 0.98) = 0.22 ton/yr.

Table 2. Emission Sources and Emissions

Emission Unit	Pollutant	Emission Factor Source	1-Hour Potential to Emit (lbs/hr)	24-Hour Potential to Emit (lbs/day)	Annual Potential to Emit (tons/yr)	2002 Production[a]
Starch Silo (per PTC 027-00026, May 5, 1998)						
Production			1 hour	24 hour	8,760 hour	Approx. 500 hrs
	PM10	Estimated; assume 0.015 gr/dscf at vendor supplied air flow rate of 600 acfm	0.077	1.85	0.34	–
Natural-Gas-Fired Boiler No. 1 (Clayton EG354-2.5-LNB, installed 1998 per IDEQ exemption letter 11/10/97)						
Production			13.69 MMBtu/hr / 1020 Btu/cf gas = 13,421.6 cf gas/hr max.	13,421.6 cf gas/hr x 24 = 322,100 cf gas/day	13,421.6 cf gas/hr x 8760 hr/yr = 117,600,000 cf/yr	30,000,000 cf[b]
	CO	Vendor Guarantee	0.5	12.0	2.2	–
	NO_2	Vendor Guarantee	0.485	11.64	2.1	–
	SO_2	Vendor Guarantee	0.009	0.22	0.039	–
	PM10	Vendor Guarantee	0.042	1.00	0.18	–
	VOC	Vendor Guarantee	0.075	1.80	0.34	–
	Lead	Engineering Estimate	0	0	0	–
	Benzene	2.1E—03 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.00003	–	0.0001	–
	Dichlorobenzene	1.2E—03 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.00002	–	0.00007	–
	Formaldehyde	7.5E—02 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.001	–	0.004	–
	Hexane	1.8 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.024	–	0.11	–
	Toluene	3.4E—03 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.00005	–	0.0002	–
Natural-Gas Fired Boiler No. 2 (Clayton EG354-2.5-LNB, installed 1998 per IDEQ exemption letter 11/10/97)						
Production			13.69 MMBtu/hr / 1020 Btu/cf gas = 13,421.6 cf gas/hr max.	13,421.6 cf gas/hr x 24 = 322,100 cf gas/day	13,421.6 cf gas/hr x 8760 hr/yr = 117,600,000 cf/yr	30,000,000 cf[b]
	CO	Vendor Guarantee	0.5	12.0	2.2	–
	NO_2	Vendor Guarantee	0.485	11.64	2.1	–
	SO_2	Vendor Guarantee	0.009	0.22	0.039	–

Table 2. Emission Sources and Emissions

Emission Unit	Pollutant	Emission Factor Source	1-Hour Potential to Emit (lbs/hr)	24-Hour Potential to Emit (lbs/day)	Annual Potential to Emit (tons/yr)	2002 Production[a]
	PM10	Vendor Guarantee	0.042	1.00	0.18	–
	VOC	Vendor Guarantee	0.075	1.80	0.34	–
	Lead	Engineering Estimate	–	–	0.000030	–
	Benzene	2.1E—03 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.00003	–	0.0001	–
	Dichlorobenzene	1.2E—03 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.00002	–	0.00007	–
	Formaldehyde	7.5E—02 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.001	–	0.004	–
	Hexane	1.8 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.024	–	0.11	–
	Toluene	3.4E—03 lb/10^6 cf, AP-42, Sec 1.4,7/98	0.00005	–	0.0002	–
Corrugator (installed 1998 per IDEQ exemption letter March 18, 1998)						
Production			385,000 sf/hr	9,200,000 sf/day	1.6 Billion sf/yr	707,200,000 sf
	PM10	Industrial Hygiene Testing	0.075	1.8	0.33	–
	VOC	7.3E-06 lbs VOC/sf	2.81	67.2	5.84	–
	HAPs/TAPs	Engineering Estimate; no data available	0	0	0	–
Printing and Gluing (installed various dates, per IDEQ exemption letter March 6, 2000, PTC 27-00026 dated July 17, 2001, and PTC 027-00026 dated September 10, 2002)						
Production			No hourly maximum ink usage determined. 315 lbs glue/hr	No daily maximum ink usage determined. 7,542 lbs glue/day	380,000 lbs ink/yr 1,500,000 lbs glue/yr	153,500 lbs ink 580,000 lbs/glue
Glue	PM	Engineering Estimate	0	0	0	–
	VOC	Calculated mass balance per MSDS, HB Fuller V3869 Glue[c], 0.33% by weight. Assume future glue will be maximum 0.50% VOC by weight.	1.6	38	3.8	–
	Total HAPs	0.20% by weight[c] (assumed future maximum)	0.63	–	1.5	
	Vinyl Acetate	0.0419% by weight	0.13	–	0.31	–
	Formaldehyde	0.0168% by weight	0.053	–	0.13	–
	Methyl Alcohol	0.0168% by weight	0.053	–	0.13	–

Table 2. Emission Sources and Emissions

Emission Unit	Pollutant	Emission Factor Source	1-Hour Potential to Emit (lbs/hr)	24-Hour Potential to Emit (lbs/day)	Annual Potential to Emit (tons/yr)	2002 Production[a]
	Acetaldehyde	0.0637% by weight	0.26	–	0.63	–
Printing and Gluing (Continued)						
Ink	PM	Engineering Estimate	0	0	0	–
	VOC	Average VOC content of ink and ink products, Year 2002 = 5.1% by weight (mainly ethanol). Assume future inks at 8 percent VOC by weight.	ND	ND	15.2	3.9
	HAPs (varies with product and color, over 100 different products used)	HAP content = 0.21% by weight. Assume future inks at 0.3% HAPs by weight. HAP breakdown is 26% glycol ethers, 38% methyl alcohol, 6% MIBK, 25% "trade secret," and 5% other.	ND	ND	0.57	–
Scrap Cyclone and Baghouse (Installed 2000 per PTC 27-00028, June 2, 2000)						
Production			2.9 ton/hr on average	70 tons scrap/day	12,160 tons scrap/yr	5,850 ton scrap
	PM	Source Test on cyclone without baghouse = 1.83 pounds PM10 per ton scrap. Assume baghouse has 98 percent post-cyclone control efficiency per vendor letter.	0.11	2.56	0.22	–
	VOC	Engineering Estimate	0	0	0	–

Table 2. Emission Sources and Emissions

Emission Unit	Pollutant	Emission Factor Source	1-Hour Potential to Emit (lbs/hr)	24-Hour Potential to Emit (lbs/day)	Annual Potential to Emit (tons/yr)	2002 Production[a]
Facility-Wide Total						
	CO	–	1.0	24	4.4	–
	NO_2	–	0.99	23.3	4.2	–
	SO_2	–	0.018	0.44	0.08	–
	PM10	–	0.35	6.8	1.16	–
	VOC	–	ND	ND	25.5	–
	Lead	–	ND	ND	0.00006	–
	HAPs/TAPs (as listed above)	–	ND	ND	2.0	

[a] Facility production rate in 2002 can be characterized as approximately "typical" or "average," in the middle range of potential facility production rates.

[b] Natural gas metered facility wide only. Gas usage listed assumes equal consumption by each boiler, neglecting deduction for gas consumed by space heaters.

[c] Other similar glues may be substituted in the future. Permit application requests limit on emissions, without naming a specific product.

ND = Not Determined

APPENDIX B

MODELING REVIEW

MEMORANDUM

DATE: November 3, 2004

TO: Almer Casile, Air Quality Permitting Analyst, Air Quality Division

FROM: Mary Anderson, Modeling Coordinator, Air Quality Division MA

PROJECT NUMBER: T2-040005

SUBJECT: Atmospheric dispersion modeling review for the Boise Paper Solutions – Nampa Container Facility Tier II Operating Permit

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1.0 Summary

Boise Paper Solutions submitted a Tier II operating permit application for their Container facility in Nampa, Idaho. Air quality analyses involving atmospheric dispersion modeling of facility-wide emissions were submitted in support of the Tier II application to demonstrate that the stationary source would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02).

DEQ conducted a technical review of the submitted air quality analyses, as certified by the applicant. Based on this review, DEQ has determined that the submitted modeling analysis demonstrated compliance with all applicable standards.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits

The Boise Paper Solutions – Nampa Container facility is located in Canyon County, designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}). There are no Class I areas within 10 kilometers of the facility. The applicable regulatory limits for this application are presented in Table 1.

Table 1. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Contribution Levels ($\mu g/m^3$)[a, b]	Regulatory Limit ($\mu g/m^3$)[c]	Modeled Value Used[d]
PM_{10}[e]	Annual	1	50[f]	Maximum 1st highest
	24-hour	5	150[g]	Maximum 6th highest[h] Highest 2nd highest
NO_2	Annual	1	100[f]	Maximum 1st highest
Formaldehyde	Annual	N/A	7.7E-02	Maximum 1st highest

a. IDAPA 58.01.01.006.93
b. Micrograms per cubic meter
c. IDAPA 58.01.01.577 for criteria pollutants, IDAPA 58.01.01.586 for formaldehyde
d. The maximum 1st highest modeled value is always used for significant impact analysis. Concentration at any modeled receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
f. Never expected to be exceeded in any calendar year.
g. Never expected to be exceeded more than once in any calendar year.
h. Concentration at any modeled receptor when using five years of meteorological data
i. Not to be exceeded in any calendar year.

2.2 Background Concentrations

The appropriate background concentrations for this modeling analysis are presented in Table 2.

Table 2. BACKGROUND CONCENTRATIONS.		
Pollutant	Averaging Period	Background concentrations ($\mu g/m^3$)[a]
PM10	24-hour	90
	Annual	25
NO_2	Annual	32

a. Micrograms per cubic meter.

3.0 Assessment of Submitted, Certified Modeling Analysis

This section documents the assessment of the application materials as submitted and certified by the applicant.

3.1 Modeling Methodology

Parametrix conducted the modeling analysis. Table 3 presents the modeling assumptions and parameters used by the applicant. Table 3 also includes DEQ's review and determination of those assumptions and parameters.

Table 3. MODELING PARAMETERS.		
Parameter	**What Facility Submitted**	**DEQ's Review/Determination**
Modeling protocol	A modeling protocol was submitted for prior approval	The protocol was reasonably followed
Model Selection	ISCST3-Prime Version 01228	This is appropriate and correct version was used.
Meteorological Data	Boise Surface and upper air, 1987 - 1991	Appropriate
Model Options	Allowed for missing meteorological data, all other regulatory defaults used	Appropriate
Land Use	Rural land use	Appropriate
Complex Terrain	Complex terrain is present and included in the model.	Appropriate
Ambient Air Boundary	Posted with "No Trespassing Signs", periodically observed by employees and unauthorized visitors are asked to leave	Sufficient to determine the property boundary as the ambient air boundary
Building Downwash	Downwash was included	Appropriate
Receptor Network	25 meter along ambient air boundary 25-50 meter at point of maximum concentrations 100 meter coarse grid	After correcting for the different coordinate systems, there was a question of whether or not the 25-50 meter refined grid was in the correct place. See Section 4.0 for a discussion of the sensitivity analysis for this issue.
Facility Layout	N/A	The facility layout used in the model was verified by using the scaled plot plan submitted by the applicant and aerial photographs of the area. When the files were imported, the receptor grid and sources were not on the same coordinate system as the buildings. This was corrected after notifying the facility and obtaining their approval.

3.2 Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application. If modeled emissions rates were equal to or slightly greater than the facility's emissions calculated in the permit application or the permitted allowable rate, then it was determined to be appropriate.

Table 4 provides pollutant emissions quantities for short-term and long-term averaging periods. The emissions of SO_2 and CO were well below the modeling thresholds of 0.2 pounds per hour and 14 pounds per hour, respectively.

Table 4. POLLUTANT EMISSIONS RATES USED FOR MODELING			
	Emission Rate (lb/hr)[a]		
Source	**PM_{10}[b]**	**NO_x[c]**	**Formaldehyde**
Starch Silo	0.077	N/A	N/A
Natural Gas-Fired Boiler No. 1	0.042	0.485	N/A
Natural Gas-Fired Boiler No. 2	0.042	0.485	N/A
Corrugator[d]	0.075	N/A	1.826E-03
Scrap cyclone and Baghouse	0.11	N/A	N/A

a. Pounds per hour
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
c. Oxides of nitrogen
d. Modeled as 4 individual point sources with the following percentages of total emissions: C1 = 12.6%, C2 = 29.1%, C3 = 29.1%, C4 = 29.1%

3.3 Emission Release Parameters

Table 5 provides emissions release parameters, including stack location, stack height, stack diameter, exhaust temperature, and exhaust velocity.

Table 5. EMISSIONS AND STACK PARAMETERS

Release Point / Location	Source Type	Stack Height (m)[a]	Modeled Diameter (m)	Stack Gas Temp. (K)[b]	Stack Gas Flow Velocity (m/sec)[c]
Starch Silo	Point	21.6	0.5	293	1.7
Natural Gas-Fired Boiler No. 1	Point	9.75	0.711	489	0.001[d]
Natural Gas-Fired Boiler No. 2	Point	9.75	0.711	489	0.001
Corrugator – C1	Point	9.75	0.91	293	7.25
Corrugator – C2	Point	9.75	1.22	293	9.4
Corrugator – C3	Point	9.75	1.22	293	9.4
Corrugator – C4	Point	9.75	1.22	293	9.4
Scrap cyclone and Baghouse	Point	6.7	1.676	293	0.001

a. Meters
b. Kelvin
c. Meters per second
d. Modeled with 0.001-m diameter to account for raincap.
e. Modeled with 0.001-m diameter to account for horizontal release.

3.4 Results

These results are based on the modeling files submitted by the applicant and reviewed by DEQ.

3.4.1 Full Impact Analysis Results

The results of the full impact analysis for both criteria and toxic air pollutants are presented in Table 6.

Table 6. FULL IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Facility Ambient Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ambient concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	24-hour	16.5	90	106.5	150	71
	Annual	4.7	25	29.7	50	59
NO_2	Annual	34.7[a]	32	66.7	100	67
Formaldehyde	Annual	1.54E-02	N/A	1.54E-02	7.7E-02	20

a. Assumes 100% of NO_x is NO_2

4.0 Sensitivity Analysis

DEQ performed a sensitivity analysis to determine whether or not the questions that arose during the review of the modeling analysis effected the design concentration and the demonstration of compliance.

As discussed above, a question of whether the receptor grid was adequate to resolve the maximum design concentration arose during the review of the modeling analysis. To ensure that these questions did not make a difference in the demonstration of compliance, DEQ performed a sensitivity analysis for these parameters. Table 7 presents the changes in modeling parameters. All other modeling assumptions/parameters used by the applicant remained unchanged in this sensitivity analysis. As seen in Table 8, the results of the sensitivity analysis are greater than those submitted by the applicant. However, they still demonstrate compliance with the NAAQS and the AACC.

Table 7. SUMMARY OF SENSITIVITY ANALYSIS		
Parameter	**Modeling files submitted by applicant**	**Changed in Sensitivity analysis**
Receptor grid used	25 meter along ambient air boundary 25-50 meter at point of maximum concentrations 100 meter coarse grid	25-meter on boundary, out to 100 meters 50-meter out to 500 meters

Table 8. RESULTS OF THE SENSITIVITY ANALYSIS							
Pollutant	**Averaging Period**	**Submitted by Applicant ($\mu g/m^3$)**	**Sensitivity Analysis ($\mu g/m^3$)**	**Background Concentration ($\mu g/m^3$)**	**Total Ambient concentration ($\mu g/m^3$)**	**NAAQS ($\mu g/m^3$)**	**Percent of NAAQS**
PM_{10}	24-hour	16.5	50.7	90	140.7	150	94
	Annual	4.7	11.8	25	36.8	50	74
NO_2	Annual	34.7[a]	31.4[a]	32	63.4	100	63
Formaldehyde	Annual	1.54E-02	1.61E-02	N/A	1.61E-02	7.7E-02	21

[a] Assumes 100% of NO_x is NO_2

APPENDIX C

AIRS INFORMATION TABLE

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Boise Packaging & Newsprint L.L.C.
Facility Location: Nampa
AIRS Number: 027-00026

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U
NO_x	B							U
CO	B							A
PM_{10}	B							A
PT (Particulate)	B							U
VOC	B							U
THAP (Total HAPs)	B							U
			APPLICABLE SUBPART					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).